5   CLAIMS

What is claimed is:

1.   A method of automatically controlling the exposure time and gain of an image

10 sensor, said image sensor including a matrix of pixels, said method comprising:

determining if a first image provided by said image sensor has an overall brightness that

falls within a stable range;

if said brightness of said first image falls within said stable range, maintaining the

exposure time and gain of said image sensor for capture of a subsequent second image;

15   if said brightness of said first image falls outside of said stable range, then adjusting said

exposure time downward by a first predetermined increment if said brightness is higher than said

stable range, else adjusting said exposure time upward by a second predetermined increment if

said brightness is lower than said stable range; and

determining if said adjustment of exposure time downward or upward is greater than a

20 predetermined threshold, and if so, increasing said gain of said image sensor if said exposure

time is adjusted downward, else decreasing said gain of said image sensor if said exposure time

is adjusted upward.

2.   The method of Claim 1 wherein said predetermined threshold is substantially a

25 magnitude of said stable range.

3.   The method of Claim 1 wherein said exposure time is measured as an exposure

row count.

5   4.   The method of Claim 3 wherein said first predetermined increment and said

second predetermined increment is one row.

5.   The method of Claim 1 wherein the amount of increase of said gain is dependent

upon the percentage decrease of exposure time and the amount of decrease of said gain is

10   dependent upon the percentage increase of exposure time.

6.   An image sensor that includes a matrix of pixels and an adjustable exposure time

and gain, the image sensor comprising:

means for determining if a first image provided by said image sensor has an overall

15   brightness that falls within a stable range;

means for if said brightness of said first image falls within said stable range, maintaining

the exposure time and gain of said image sensor for capture of a subsequent second image;

means for if said brightness of said first image falls outside of said stable range, then

adjusting said exposure time downward by a first predetermined increment if said brightness is

20   higher than said stable range, else adjusting said exposure time upward by a second

predetermined increment if said brightness is lower than said stable range; and

means for determining if said adjustment of exposure time downward or upward is

greater than a predetermined threshold, and if so, increasing said gain of said image sensor if said

exposure time is adjusted downward, else decreasing said gain of said image sensor if said

25   exposure time is adjusted upward.

5   7.   The image sensor of Claim 6 wherein said predetermined threshold is substantially a magnitude of said stable range.

           8.   The image sensor of Claim 6 wherein said exposure time is measured as an exposure row count.

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           9.   The image sensor of Claim 8 wherein said first predetermined increment and said second predetermined increment is one row.

           10.   The image sensor of Claim 6 wherein the amount of increase of said gain is dependent upon the percentage decrease of exposure time and the amount of decrease of said gain is dependent upon the percentage increase of exposure time.